YELLOWSTONE SCIENCE

volume 16 • number 2 • 2008

YELLOWSTONE GRIZZLY BEARS

Bears in Transition, 1959–1970s

From Garbage, Controversy, and Decline to Recovery

Delisting the Yellowstone Grizzly Bear

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Landmarks and Landscapes

"THE LIVIN' IS EASY," COURTESY OF MARSHA KARLE

Twenty-five Years of the Interagency Grizzly Bear Committee

YELLOWSTONE IS BLESSED with many powerful symbols, both natural and cultural, but none of them resonate more richly in our collective imagination than the grizzly bear. We engage the grizzly bear in a relationship that is nothing less than symbiotic. Just as the grizzly bear has enriched the Yellowstone experience, so has Yellowstone enriched the very idea of the grizzly bear in world culture. We who love wildness now employ an amazing array of instruments of wonder, everything from cutting-edge science to spotting scopes to musical composition, in our efforts to do justice to this magnificent creature.

But it's a long way from such lofty sentiments to the day-to-day challenges of caring for the bear and ensuring its survival. This issue of *Yellowstone Science* is especially welcome for its thorough documentation of the development of modern grizzly bear conservation, including the formation of the all-important Interagency Grizzly Bear Committee (IGBC) twenty-five years ago. Those of us who have served on the Interagency Grizzly Bear Committee—and all of you who have had business with us as constituents, advocates, advisors, or staff—also remember difficult decisions and toilsome wranglings beyond counting. It has been a long trail.

But that rather mundane behind-the-scenes reality just makes celebrating the first quarter century of the IGBC all the more important. We must never forget what is really behind each transcendently glorious view of a backlit grizzly bear on a high ridge. Since 1983, the IGBC has threaded the labyrinths of politics and procedure in fulfilling society's urgent quest to recover the grizzly bear. The nearly spectacular response of the grizzly bear population in greater Yellowstone is the only testament we should ever need to the ultimate value of the bureaucratic arts when they are well and sincerely practiced.

Commemoration of this important anniversary reminds us of earlier historic landmarks, some of which the IGBC was built upon. This year we celebrate the thirty-fifth anniversary of the Interagency Grizzly Bear Study Team, whose extraordinary scientific achievements were essential to our management decisions. The light and wisdom of their work has forever changed our relationship with the grizzly bear.

Just as significant, this year we also celebrate the 125th anniversary of a now-forgotten turning point in American conservation history. On January 15, 1883, Secretary of the Interior H. M. Teller instituted a ban on hunting—for sport or subsistence—in Yellowstone National Park. In that one stroke, he converted the park into a public wildlife preserve of unprecedented size and created the historic opportunity that would eventually lead us to modern ecosystem management.

So we celebrate the IGBC's twenty-fifth birthday and these other landmarks because they've kept this beautiful living symbol abundantly at large on our landscape. But we also celebrate them to remind ourselves of the arduous professional and public conversations that have gone into this success story, and to remind us of many challenging conversations to come. Recovery is a monumental step in the right direction, but there are many steps still to take.

Self congratulation is always a little risky; it should be most reluctantly practiced. But perhaps the next time each of us sees or even thinks about a grizzly bear, we owe ourselves a modest pat on our collective back. Then we should return our attention to the grizzly bear, the real hero of the story. It was, after all, the bear that brought out the best in us and got us this far.

Suzanne Lewis

Superintendent, Yellowstone National Park

YELLOWSTONE SCIENCE

a quarterly devoted to
natural and cultural resources

volume 16 • number 2 • 2008

Yellowstone Science is published quarterly. Support for *Yellowstone Science* is provided by the Yellowstone Association, a non-profit educational organization dedicated to serving the park and its visitors. For more information about the association, including membership, or to donate to the production of *Yellowstone Science*, visit www.yellowstoneassociation.org or write: Yellowstone Association, P.O. Box 117, Yellowstone National Park, WY 82190.
The opinions expressed in *Yellowstone Science* are the authors' and may not reflect either National Park Service policy or the views of the Yellowstone Center for Resources.

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Editor, *Yellowstone Science*, P.O. Box 168, Yellowstone National Park, WY 82190.
You may also email: Tami_Blackford@nps.gov.

Yellowstone Science is printed on recycled paper with a soy-based ink.

on the cover:
Grizzly sow and cubs.
NPS photo.

NPS/JIM PEACO

FEATURES

DEPARTMENTS

News & Notes

Endangered Species Program Recovery Champions Award

Yellowstone Superintendent Suzanne Lewis as well as four of the authors (Chris Servheen, Chuck Schwartz, Mark Haroldson, and Kerry Gunther) of papers in this issue of *Yellowstone Science* received the U.S. Fish and Wildlife Service's 2006 Endangered Species Recovery Champions Award. The award was given to all members of the Interagency Grizzly Bear Committee, the Yellowstone Ecosystem Subcommittee, the Interagency Grizzly Bear Study Team, and the U.S. Fish and Wildlife Service Grizzly Bear Recovery Coordinator for their contributions to the conservation and recovery of the grizzly bear in the Greater Yellowstone Area. The award recognizes U.S. Fish and Wildlife Service employees and partners who are a making a difference in promoting recovery of endangered or threatened species. These individuals have been instrumental in achieving milestones to help advance a species toward recovery. Recovery of this iconic species has required cooperation among numerous federal and state agencies, non-governmental organizations, local governments, and citizens. Collectively, these efforts represent one of the most compelling success stories since the inception of the Endangered Species Act.

NPS/JIM PEACO

NPS/DOUG SMITH

A Leopold pack wolf following a grizzly bear, 2007.

Grizzly Bears in Yellowstone National Park Do Well First Year After Delisting

On April 30, 2007, the U.S. Fish and Wildlife Service removed grizzly bears in the Greater Yellowstone Ecosystem from threatened species status under the Endangered Species Act. Grizzly bears in Yellowstone National Park did well the first summer after delisting. Fourteen adult female grizzly bears with 33 cubs were observed inside the park. Litter sizes were 7 litters of triplets, 5 twin litters, and only 2 single-cub litters. Average litter size in the park was 2.4 cubs. The number of cubs produced significantly exceeded the number of grizzly bears that died due to human causes (n=1). In 2007, there were no grizzly bears killed in collisions with vehicles, and only one nuisance grizzly bear had to be removed in a management action in the park.

Northern Rocky Mountain Wolves Removed from Endangered Species List

The gray wolf population in the Northern Rocky Mountains is thriving and no longer requires the protection of the Endangered Species Act. As a result, the U.S. Fish and Wildlife Service (USFWS) removed the species from the federal list of threatened and endangered species. The delisting of the Rocky Mountain population took effect on March 28, 2008. There are currently more than 1,500 wolves and at least 100 breeding pairs in Montana, Idaho, and Wyoming.

USFWS-approved state management plans will provide a secure future for the wolf population now that Endangered Species Act protections have been removed and the states have assumed management of wolf populations within their borders. The northern Rocky Mountain distinct population segment includes all of

Montana, Idaho and Wyoming, as well as the eastern one-third of Washington and Oregon, and a small part of north-central Utah.

The recovery goal for wolves in the northern Rocky Mountains was set at a minimum of 30 breeding pairs (a breeding pair represents a successfully reproducing wolf pack) and a minimum of 300 individual wolves for at least three consecutive years. This goal was achieved in 2002, and the wolf population has expanded in size and range every year since.


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The yearlings trapped on Stevenson Island in transit across Yellowstone Lake.

Update on Yearling Grizzly Bears Rescued from Stevenson Island

In June 2005, Bear Management Office (BMO) staff successfully trapped and translocated two yearling grizzly bears that had been stranded on Stevenson Island. The BMO had received a report of an adult female grizzly bear with two yearlings there. BMO staff investigated the shore around the island and found tracks of an adult grizzly bear and at least two yearlings. Numerous bear scats were also found. The age and quantity of the tracks and scats indicated that the bears had likely been present on the island before the ice broke up on Yellowstone Lake in May.

BMO staff placed a bait station and made a track pit (raked the ground of a likely travel corridor smooth and clear of debris, to make subsequent tracks clearly visible) to determine if the bears were still present on the island. When the bait station was revisited, tracks of two yearlings but no adults were found, suggesting that the adult female may have swum for shore and abandoned the two yearlings. Because of their small size, the yearlings may have been afraid to swim the 1.4 miles to the nearest shore at the Gull Point/Sand Point area.

Although there was plenty of succulent vegetation for the bears to graze, the types and quantity of late summer and fall bear foods were rather scarce. Thus, it was likely that if the bears remained on the island they would have starved to death, as has happened in the past. Because grizzly bears were a threatened species, the decision was made to capture the bears and translocate them back to the mainland.

The two yearlings (both females) were captured, measured, tagged, and weighed (71 lbs. and 76 lbs.). They were underweight for their age but healthy. Their chances for survival were estimated at 50%, and as high as 80% if they rejoined their mother on the mainland. The cubs were allowed to fully recover, and then transported to the South Arm of Yellowstone Lake for release. They were monitored by telemetry for the rest of the summer and, based on their movements, were thought to have survived the summer and fall. By late fall 2005, both bears had lost their transmitters and could no longer be monitored.

On October 13, 2007, the Interagency Grizzly Bear Study Team captured one of the yearlings in a research trap in Flat Mountain Arm of Yellowstone Lake. The now three-year-old bear was identified from the lip tattoo applied when the bear was captured on Stevenson Island. She was slightly small for her age, but she had a layer of fat and was generally healthy, weighing 176 pounds. The fate of her sibling is unknown.


NPS/JIM PEACO

Orphaned and marooned yearling grizzly bear from Stevenson Island being released on the mainland, 2005.


BOB WESELMANN

White-tailed Jackrabbits, Species of Interest

Recent newspaper accounts that white-tailed jackrabbits had been extirpated from Yellowstone National Park are unfounded. These accounts have generated a lot of interest in both the historical and contemporary abundance and distribution of white-tailed jackrabbits in the park. In 1926, park naturalist M. Skinner reported that white-tailed jackrabbits were "common between Gardiner and Mammoth Hot Springs, and may also be seen almost anywhere in the open northern sections of the Park." Today, white-tailed jackrabbits are still regularly observed from the park boundary at Reese Creek east to Gardiner, and south to the Mammoth Terraces. The distribution of white-tailed jackrabbits in the park appears to have changed very little since the 1920s. They occupy grassland-sagebrush communities below 6,500 feet that receive less than 16 inches of annual precipitation. White-tailed jackrabbits are also occasionally observed on the Blacktail Plateau, but appear to occur at much lower densities in that area. Park staff are still investigating the current and historical presence, abundance, and distribution of jackrabbits in the Lamar Valley.

Grizzly Bear #539 Captured and Sent to Washington

A three-year-old female grizzly bear weighing approximately 140 pounds was captured on August 19, 2007, after frequenting two developed areas near Yellowstone Lake for the last two years. Grizzly #539 had entered the Lake Village and Fishing Bridge developments numerous times. She had been hazed away from those areas more than 40 times using beanbag rounds, cracker shells, and other techniques. This bear had previously been relocated by boat to the opposite side of Yellowstone Lake and by helicopter to the Gallatin Mountains in Yellowstone National Park. She returned to the Lake Village and Fishing Bridge developed areas after both relocations. She was responsible for at least eight instances of property damage, mostly by chewing hoses used for sewage hookups on employee trailer houses.

Because multiple hazing and relocation efforts were not effective, the decision was made to remove the bear. She was captured and driven to the Washington State University Bear Research, Education, and Conservation Program. For more than 20 years, the bear management program in Yellowstone has assisted with and benefited from the non-invasive ecology, nutrition, and physiology studies on bears performed there. More information on the program is available at http://www.naturalresources.wsu.edu/research/bear-center/index.html.

The Yellowstone National Park bear management policy strives to ensure a natural and free-ranging population of black and grizzly bears. This bear was habituated to people, had been involved in several instances of property damage, and had also received some minor food rewards. Bears that are both conditioned to human foods and habituated to human presence often become dangerous to people. Removal was considered the best course of action in this case to prevent human injury and further property damage.

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Grizzly bear #539.

Bears in Transition, 1959–1970s

Mary Meagher

NPS/JOHN GOOD

Grizzly bears at the Trout Creek dump, 1964.

BY GOOD CHANCE, my time in Yellowstone spanned major additions to the park's knowledge of bears, both grizzly and black, as well as changes in management of both bears and people. Perhaps most importantly, the park's attitude toward bears shifted from tolerating (sometimes with amusement) a certain level of problems generated by bear access to human foods to one of what bears should be in a place managed as a natural area. I have been fortunate to observe, learn from, and sometimes, be involved with the changes because I came to work in Yellowstone in October 1959. Although the following discussion focuses on the park's grizzly bears, much of what is said applies also to the black bear population.

Almost since the establishment of the park, simply protecting bears had been deemed sufficient. Along the way, anecdotal information about bears accumulated, and some basic techniques developed for dealing with problems as they occurred. Some bear-caused human injuries—although unfortunate, certainly—were also a part of the bear scene. But the 1960s and the first half of the 1970s marked a fundamental transition period, especially for the grizzly bear, and more so than we recognized at the time. From the bears' perspective, this transition was biological, but concurrently, there were transitions of a human sort, in priorities, responsibilities, and attitudes. Schullery (1992) traced much of this in detail.

Reactive Bear Management

Prior to the 1960s, our knowledge of Yellowstone bears consisted mostly of observational natural history (an often necessary foundation). In 1959, Yellowstone National Park had no research program of any kind nor were research biologists employed by the National Park Service. Research oversight was mainly carried out by naturalists in the interpretive division. They handled collecting permits and provided an office contact for interested scientists, be they from the academic world or from other government agencies, such as the U.S. Fish and Wildlife Service. Independent researchers, although few in number, were likewise welcome, but any collected specimens had to be deposited in a public institution. Depending on the research topic, there might be some coordination with the ranger division, and some oversight provided by rangers whose districts might be involved.

Bear management was the responsibility of the ranger division, charged then, as now, with law enforcement and resource protection. Although a management biologist position existed from about 1962 to 1968 to oversee the artificial regulation of ungulate numbers that was deemed necessary at the time, the position had little to do with bear management. Present-day resource management specialists, the successors of the management biologists, were unknown. At the time of the transition period discussed here, and before, bear management consisted mostly of reacting to problems as they occurred, and were usually handled by the rangers responsible for the locale involved. Oversight was provided by district and assistant chief rangers, with involvement by the chief or higher administrative levels as circumstances dictated.

Bear problems were those of bear–human conflicts in campgrounds and developed areas (both bear species) and along park roads (almost always black bears). Management

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Visitors were encouraged to view bears at dumps, ca. 1920s.


NPS, YNP, DANECKI, YELL 27353-7

Visitors at the Otter Creek bear feeding grounds, ca. 1930s.

techniques were basic: live-capture of problem bears with manually-operated culvert traps, coupled with relocation within the park to sites accessible by road. The ranger who was the most experienced person I knew at dealing with bear problems advocated blueberry pie as the best bait (G. Mernin, personal communication). Incorrigible returnees were dispatched, occasionally sent to zoos, otherwise shot. At the time, backcountry use was infrequent compared to the present and consisted mostly of outfitters with horse parties. Hikers were few, and backcountry problems were not an issue.

Well before the transition period addressed here, park files showed increasing concern about human injuries and property damage from both species of bears, especially after World War II as park visitor numbers and their attendant garbage and camp foods escalated. For example, ranger Jim Valder noted in a memorandum to the assistant chief ranger (JBV 1959) that although human injuries decreased from 74 to 37 from 1957 to 1959, property damage incidents increased from 32 to 66, and bears killed by park staff from 32 to 66. These numbers must have been partial only, as Schullery (1992:294) shows property damage for the same three years to have been 125, 117, and 269. With numbers such as these, complaints undoubtedly escalated. A park visitor (Andrews 1956) stated that he and his family counted 71 bears (probably mostly black bears, campground and roadside) during their 48-hour visit to the park, which included a stay at the Canyon campground. He mentioned the "free and frequent roaming of bears through this campground," and stated that his wife was appalled at their numbers and boldness and wished to leave immediately. He further criticized the sanitation involved.

Management of people entailed both human activities and their residue. To some extent, personnel from all park divisions had a role in addressing the where, when, and kinds of human activities, but garbage management, in whatever form and source, was a function of the maintenance division. The bulk of garbage was seasonal, derived from the hotels, restaurants, campgrounds, and other visitor-use facilities open in summer; this coincided with a highly visible level of bear activity. The summer season was much shorter then; peak operations extended through July into August, but declined rapidly about the last week of that month as travel decreased before schools opened. A winter operation did not exist, and the so-called shoulder seasons of the present were nearly non-existent.

At the beginning of the 1960s, open-pit garbage dumps were used for reasons of custom, cost, convenience, and lack of alternatives. Five or six dumps were distributed throughout the park, placed within reasonable transport distance from the various developments—roughly 8 miles or less (Cole 1970). Additionally, a large dump that served West Yellowstone was located a few miles north on Forest Service land adjacent to the park boundary, and a small dump was located at the east edge of Cooke City outside the park's northeast corner. The town of Gardiner used a dump inside the park a mile and a half west of the north entrance, just north of the Stephen's Creek road. The dumps "grew" from the park's beginnings, even as park visitation increased. There were no bear-proof garbage cans, dumpsters were non-existent, and incinerators did not appear until about the mid-1960s. The two unfenced incinerators that served Bridge Bay and Grant Village were located ¼ to 2 miles from those respective developments. A third incinerator was located just below the lower housing area of Mammoth, but was fenced (Cole 1970). Unfortunately, the quantity of garbage edible by bears, coupled with limited incinerator capability, resulted in cooked edibles rather than ash (G. Mernin, personal communication), ensuring that the incinerators, particularly the two interior ones, would attract bears even closer to developments.

A comment here is pertinent regarding the composition of garbage during much of the 1960s. Commercial suppliers of quality, prepared food as used now by concessionaire kitchens were non-existent. Hotels prepared food in their kitchens from basic supplies, resulting in a high level of waste, trimmings,

spoilage, etc., similar to that which occurs in home preparation, but the quantities involved from the hotel kitchens were enormous by comparison. This food preparation system vastly increased the amount of garbage that went to the open-pit dumps. Garbage consisted, therefore, of a great quantity of edibles and non-edibles, such as cans, bottles, and the occasional hotel spoon, lost from the flatware of a dining room, all mixed together. Large non-edible items to be disposed of, such as wood or metallic junk, went to so-called dry dumps, although it is possible that occasional edibles were included.

Bear Research Begins

Except for Olaus Murie's 1944 study of Yellowstone bears, there was little systematic effort to gather what would now be termed ecological and population data. A long-term grizzly bear study, commonly referred to as the Craighead study, began in 1959 and lasted until 1971. It was led by John Craighead, of the Montana Cooperative Wildlife Research Unit-U.S. Fish and Wildlife Service at the University of Montana in Missoula, and his brother Frank, then a professor of ecology at the State University of New York, Albany. Their field work was based at the old concessionaire auto repair buildings south of the main Canyon development, which facilitated their primary focus on the Trout Creek dump in Hayden Valley.

According to information in park files, John Craighead's first overture to the National Park Service was made to the Washington office (Craighead 1958). He expressed concern for the apparently declining number of grizzly bears in Montana, but said that he could not locate a good study site with enough bears for research. Yellowstone National Park seemed to offer a suitable place to study ecological and population factors. He had visited the Trout Creek dump with the chief park naturalist, Dave Condon, in the summer of 1958 and had discussed the idea of a study with him and the assistant chief park naturalist, Dave (Merrill D.) Beal. Condon was most encouraging (Condon 1958), and the study was subsequently endorsed by the superintendent, Lon Garrison (Garrison 1958). Trout Creek dump, which served the large facilities at Canyon, Lake, and Fishing Bridge, offered an unmatched quantity and variety of edibles for bears and, accordingly, attracted the largest number of grizzly bears and other scavengers, including ravens, magpies, and dozens of seagulls. The suggestion to use dumps as study sites was understandable in the circumstances of the time.

During the earlier years of the Craighead study, the park service made efforts to protect marked study bears. Removal of problem bears from campgrounds and developed areas was delayed compared to the quick removal (relocation or killing) in the past. But marked bears were dump bears because that is where bears were marked. Based on data gathered by Maurice Hornocker (1962), a graduate student who assisted the Craigheads, Cole (1971) estimated that up to 100 different grizzly bears were using the Trout Creek dump, while Rabbit Creek and the West Yellowstone dumps each attracted an estimated 40 bears. Dump location, at a "reasonable" distance from developments, facilitated grizzly bear use of campgrounds as more bears learned about these sources of human food but

CRAIGHEAD COLLECTION

John and Frank Craighead at Trout Creek, where they began their grizzly bear study in 1959, photo circa 1966.

NPSD. A. BROWN

Weighing a grizzly for the Craighead study, 1961.

remained in the population. As visitor numbers increased, so did garbage and camp foods. Episodes such as the following became appallingly frequent. In a span of four hours at the 400-site Canyon campground in the mid-1960s, rangers saw seven different grizzly bears and five different black bears (G. Mernin, personal communication). This underscores the lack of food and garbage security then; there was none. A ranger's workday morning usually began with bear-caused property damage reports, but a rather amazing lack of personal injuries.

Eventually the park had breeding grizzly boars in the campgrounds. About 1971 or 1972, I was a fascinated observer of an attempted live capture at Canyon campground. Rotten fish were the bait for a culvert trap. A big black shape of a boar materialized in the darkness, got his fish, and disappeared soundlessly. Not surprisingly, bear visitation to campgrounds came to include mother grizzlies with cubs-of-the-year, and these mothers are particularly sensitive to the welfare of their cubs, making an especially bad mix for all concerned. Numbers of bears in the campgrounds escalated as young bears learned from their mothers. From 1966 through 1975, rangers spent their days on regular duties, and their nights trying to prevent havoc in their campgrounds, sometimes just disappearing to sleep where they could not be found when the day operation could be handed off to experienced personnel. Yellowstone developed some of the best field-experienced bear management rangers in the National Park Service. Fortunately for bears, rangers, and visitors, the training-ground has closed, recognizing the rare circumstance when that kind and level of bear expertise might be wanted.

Coincidentally, during the early years of the Craighead study, a National Academy of Science review (Robbins et al. 1963) expressed an appalled reaction to the state of natural history research conducted by the National Park Service throughout the park system. The authors advocated "mission-oriented research" in keeping with the unique management obligations of the agency to maintain park resources in a natural and "unimpaired" condition. This report, coupled with a very public and heated controversy that peaked during the mid-1960s over Yellowstone's elk reductions, unquestionably added impetus to the assignment of Glen Cole to the newly-created position of supervisory research biologist in Yellowstone in 1967.

That same year, the Craigheads (Craighead and Craighead 1967) submitted a number of management recommendations to the park superintendent, among which was one that advocated grizzly bears be "weaned" slowly from use of the garbage dumps. They believed that nutritionally, garbage was a necessary supplement for the bears, although this was not supported by data. Hornocker (1962:87), a graduate student working with the Craigheads, discounted garbage as much of an influence on grizzly bear population numbers, but John and Frank's perspective likely was based on their concern about

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Grizzly bears congregated to feed at the Trout Creek dump, 1970.

the size of the Yellowstone grizzly bear population, which they estimated to average 174.

John and Frank also had other concerns for grizzly bear welfare. Their study data underscored the role of dumps as an influence on bear movements and concentrations, including grizzlies from beyond park boundaries. The Craigheads believed that maintaining an attractive food source roughly central to the park would help protect grizzly bears from conflicts with people, which sometimes resulted in bear mortality. They advocated a phase-out of the open-pit garbage dumps over some years, to give the bears a better opportunity to adjust to natural foods in summer rather than scattering into various developments in search of human foods (Craighead et al. 1995:364 were more specific, advocating 8 to 10 years or longer for a phase-out). Alternatively, as a substitute if the dumps had to be closed abruptly, their recommendation was to provide bison and elk carcasses as supplemental food.

Garbage in Transition

Concession management changes in the park began to affect the garbage dumps. Instead of preparing meals from scratch, in about 1968 the hotel and restaurant kitchens began purchasing the prepared foods that were becoming much more available (B. Hape, personal communication). This decreased the quantity of garbage available to bears considerably, and abruptly. Even so, an estimated 7,000 tons of edible garbage was available to bears from June 1 to September 15 in 1968 and 1969 (Cole 1970). By then, only the Rabbit Creek dump north of Old Faithful, and the Trout Creek dump in Hayden Valley were still in use in the park.

Shortly after the change in food preparation methods, Executive Order #11507, dated February 4, 1970, required the closing of open-pit garbage dumps on federal lands. From a sanitation perspective, this was long overdue, as the dumps in places such as Yellowstone had become large and nasty as park visitation increased. At Trout Creek dump, the largest, seepage from rotting garbage and chemicals from non-edibles polluted the stream (Meagher, personal experience). Too, the dumps had become increasingly dangerous over the years as people, including employees, came to watch the bears. After the season of 1970, the last large open pit garbage dump in Yellowstone closed.

Postscript on the Craigheads' Study

The various administrative changes coupled with much more emphasis on natural area management altered the milieu in which the Craigheads established and conducted their grizzly bear study. Simply put, the Craighead focus was on grizzly bears single-mindedly; that of park management was on Yellowstone as a whole, of which grizzly bears were only one element. The objective of the park service was to maintain as natural an area as possible. Not surprisingly, controversy developed between the Craigheads and park management, particularly over the open-pit garbage dumps and their role in the grizzly bear livelihood, but the focus here is primarily on the biology involved.

Bear Survival without Human Foods

Consider that before Yellowstone was established, both species of bears apparently had survived quite well, and probably had since large mammals colonized the Yellowstone plateau after the Pleistocene ice vanished. It seems unlikely that the grizzly bear population would need nutritional supplements during summer, as recommended by the Craigheads. Springtime, after emergence from dens, and fall, when bears need to acquire extra body reserves for the long winter ahead, would appear to be more critical to their nutrition than was summer. And spring and fall were the times when supplemental food from garbage and campground foods were unavailable.

The bears, obviously, had to survive the critical early and late seasons on natural foods. For example, during the very late spring of 1970, Cole (1972) noted that from March 29 through May 30 there were 330 grizzly bear observations, of which 64% involved interactions with ungulates. He estimated 30 different grizzlies were involved. Among employees, the word was out that almost daily bears could be observed taking elk along the roads that transected the Firehole-Madison north to the Norris areas (Meagher, personal information).

Another point should be made concerning ungulates as food for bears. Management reductions, once thought necessary to regulate population numbers, ceased with the end of

WILLIAM CAMPBELL

Grizzlies returned to natural foods when the dumps closed.

winter in 1967 for bison, and 1968 for the elk. Bison numbers parkwide had been reduced to about 400 (Meagher 1973) and the northern Yellowstone elk to a winter count of 4,865 (Houston 1982:17). Left alone, these populations increased rapidly. By 1975, the winter count of bison was 1,049 (Meagher, unpublished), and the northern Yellowstone elk had increased to 12,607 (Houston 1982:17). Even as sources of human foods disappeared, the potential increased for "good" bears to scavenge winter-killed carcasses as an important natural food source. For spring 1981–1982, I estimated a biomass of 140,600 pounds of winter-killed bison available to scavengers (National Park Service 1984:94). This would be conservative, representing only documented carcasses.

> The park cannot guarantee a visitor will see a bear, but we should be able to guarantee that if a bear is seen it's living as a proper bear should.

Beyond the Craigheads' approach to management of grizzly bears, they also recommended a zoning and manipulative approach for other wildlife species. Concerning black bears, not a study subject for the Craigheads, they endorsed the enjoyment of the visiting public in observing black bears along park roads, while recognizing that feeding should cease (in reality, one was not possible without the other, as the then-ubiquitous black bear would not hang out along a road if it were not being fed). None of this reflected the management philosophy of a national park as a natural area. This philosophy had developed over some decades, but was articulated increasingly by the 1960s, and was accompanied by stronger emphasis on legal interpretations of the act that established the National Park Service in 1916.

Neither the park service nor the Craigheads could foretell what would be the outcome of their divergent views. Limited experience with a dump closure at Glacier National Park in the 1960s appeared to occur with minimal problems (Schullery 1980, 1986). In Yellowstone with the onset of World War II, lack of visitors ensured that garbage everywhere in the park was reduced, and the bear-feeding grounds that operated as shows for the public were closed. Problems escalated as garbage-conditioned bears sought human sources of food elsewhere, and bears were killed. But the habitats of the two parks differed, and so did the numbers and kinds of assorted scavenger populations, including bears, that used the dumps.

Yellowstone field personnel certainly had doubts, because as visitation tapered down rapidly at the end of August and garbage decreased, more bears entered the campgrounds (G. Mernin, personal communication). But in spite of doubts, the park service elected to try phasing out the dumps, in an effort to address the Craigheads' recommendation regarding "weaning." As a first step toward phase-out, the garbage was separated into edibles and non-edibles, with only edibles taken to the dumps. Partly, the decision to try a phasing-out program was made because the incinerators then in use could not cope with the quantity of mixed garbage, and separation might allow effective de-odorizing of the non-edibles (G. Mernin, personal communication). But because of the kitchens' shift to the use of prepared food, the separated edibles, which were still taken to the dumps, were considerably reduced. The apparent result was that dominant bears could possess the goodies, and there was a sharp increase in campground and developed area grizzly bear activity. When separation ceased, the conflicts settled down, relatively (Cole 1970, 1976).

After the Dumps Closed

The garbage dump closures and the disengagement of their host of grizzly bears and other scavengers could not succeed without addressing all available sources of human foods parkwide. In particular, food could not be available to black bears along roads and in campgrounds with any hope of solving the grizzly bear problem. Deliberate feeding of bears along roads and elsewhere had been formally prohibited in 1902, but enforcement was feeble to non-existent. Partly this was a technological problem; despite efforts to secure garbage in campgrounds, the bears readily solved the access problem. When a widely-used, step-peddle lever affair with an underground pit was tried in the Canyon campground in the mid-1960s,

NPS

Black bear investigating a bear-proof garbage can, late 1960s–mid 1970s.

NPS/CANTER

Grizzly-damaged garbage can, 1970.

bears sometimes were in the garbage within five minutes (G. Mernin, personal communication). A bear-proof garbage can finally appeared in the late 1960s, the design similar to that used to secure mailboxes. These were in place on nearly all park garbage cans by the mid-1970s (Cole 1970). The design worked, although a few of the biggest, experienced grizzlies did gain access, simply by crushing the whole set-up. This may have been a problem mainly at the Fishing Bridge RV park, where the concession operator had installed cans of a lighter-weight metal (G. Mernin, personal communication).

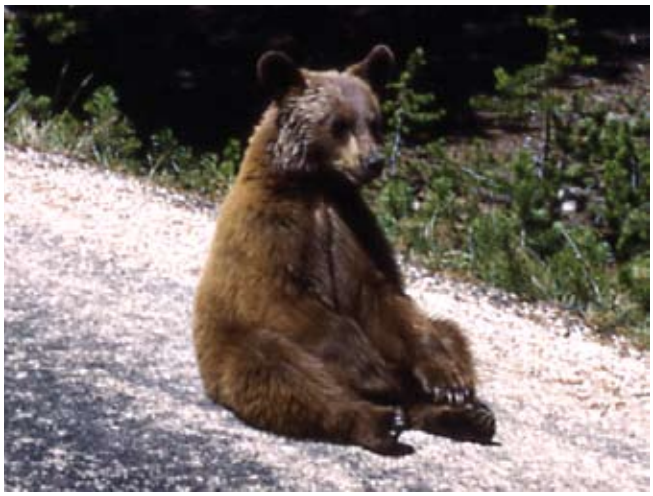
Additionally, there was a determined program of instructing the people in campgrounds to secure ice chests and camp foods where bears could not get at them, such as in car trunks or recreational vehicles, and otherwise informing campground users regarding food availability and bears. Citations followed for people who ignored the warnings. Experience had taught park personnel how readily bears learned about food: in cars with slightly-open windows, inside tents, ice chests, or wherever else odors were retained, bears would attempt to get at food. For experienced bears, sight was sometimes enough of a lure; ice chests were a prime example.

So as the last of the open-pit garbage dumps closed (Rabbit Creek in 1969, Trout Creek in 1970, West Yellowstone outside the park in early 1971) and human foods became mostly unavailable, what of the bears? During the first half of the 1970s, the park went through the unpleasant task of removing what were termed incorrigible bears, those that returned time and again to seek human foods and became habituated to human activities. Relocation was tried whenever possible, but in the end, most of the knowledgeable grizzly bears were dispatched, to be used as scientific specimens. The black bear clean-up mostly took care of itself once food sources became unavailable, and the roadside black bears began to vanish. Determined incorrigibles were relocated or removed. This broke the chain of learning that had been fostered by mother black bears bringing their cubs to roadsides and campgrounds.

In marked contrast to the present, in which control actions for bears are infrequent to rare, in 1970 park staff carried out 70 control actions involving 50 different grizzly bears (Cole 1976). Twenty bears were removed permanently, including 12 sent to zoos. Record keeping was difficult at the time and information sources don't always match, but because of the painstaking overhaul of numbers done in the late 1970s by biological technician Sue Fullerton for Paul Schullery (1992 and earlier editions), I have elected to use his removal numbers. Suffice to say that 1970 was the peak year for dealing with problem grizzly bears after the dumps were closed, bear-proof garbage cans were mostly installed, and intensive education and law-enforcement measures were instituted. By 1976, management emphasis had shifted to a program of mostly prevention.

Hindsight being what it is, and as we all came to understand more about bear behavior, intelligence, and capacity to learn, it became clear that only an abrupt closure of garbage dumps and attendant efforts to ensure secure storage of human foods would have been successful. The continuity of learning as bears passed along knowledge had to be terminated abruptly. The evolutionary heritage of bears seems to include the ability to remember for a lifetime where they got a good meal, even perhaps only once. This trait would have served the bears well, as natural food sources commonly are inconsistent over time. But this same trait dictated that the park could only "grit teeth and tough out" an unpleasant time and program.

My personal experience underscored that the bear situation could only have been cleaned up with an abrupt and thorough denial of human foods for bears. After the Trout Creek dump closed, I stopped by to look it over, usually several times every summer, for 12–15 years, as it was close to my most-used travel route up Hayden Valley while doing bison research. The surface of the dump had been covered over with earth fill, and there was no possibility of new edibles (the road was closed also), but every time I could see where "someone" had dug into the surface. Just checking.


NPS/R. ROBINSON

Roadside black bear on Dunraven Pass, 1962.

Future Prospects for Yellowstone Bears

The bears have come a long way, biologically. That's important. But it happened only because many people, including the Assistant Secretary for Fish, Wildlife, and Parks and Yellowstone's superintendent and his staff, were willing to take on a tough and very contentious resource issue, with lots of unknowns. Fortunately for the bears, these people were successful. The park cannot guarantee a visitor will see a bear, but we should be able to guarantee that if a bear is seen it's living as a proper bear should.

Consider, however, that if bears again became as visible to the public as when sources of human foods were available, with the 3 million visitors that came to the park in 2007, the park would sort of congeal. Roads would be jammed far beyond the current scene caused by viewing of assorted wildlife. Bear-caused injuries, now fewer than those caused by the occasional human–bison encounter, would escalate, and it seems probable that the prevention of a host of other negative people–wildlife conflicts would become an operational impossibility. It's necessary to emphasize that bears will again be along the roadsides as *predictable* occurrences, as they once were, if they are fed. Same spot, same bear, no guesses necessary as to cause. The bears could be especially vulnerable to such a shift because some individuals are fairly habituated to human observers, and could be that much more easily fed while being watched. And a fed bear eventually is a dead bear.

A program of prevention becomes increasingly hard to maintain. People become euphoric, knowledge and experience decrease or vanish, and management priorities change. Present-day levels of visitation, coupled with increasing budget and staffing constraints, could again result in roadside bears becoming the bear equivalent of "the urban rat" (a 1969 report for Canadian and U.S. national parks, quoted in Schullery 1992:219).

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NPS/BRIAN HARRY

Grizzly bear cubs.

Acknowledgements

G. Mernin adamantly refused to co-author with me, but his thoughtful read-through of this article, and contributions of first-hand knowledge of the period added a reality statistics only cannot do. K. Gunther, J. Jerla, and J. Gerdes helped with necessary references. Thank you.

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